

Letters to the Editor

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NOTES ON POINTS IN SOME OF THIS WEEK'S LETTERS APPEAR ON P. 794.

CORRESPONDENTS ARE INVITED TO ATTACH SIMILAR SUMMARIES TO THEIR COMMUNICATIONS.

Relation of the Posterior Lobe of the Pituitary Gland to Anæmia and to Blood Formation

It has been shown (Dodds, Noble and Smith¹, Dodds and Noble²) that it is possible to prepare an extract of the posterior lobe of the pituitary gland which, when injected subcutaneously or intravenously into animals, will cause an intensive hæmorrhagic lesion of the acid-bearing area of the stomach, from which the animals usually recover completely. Chronic ulcers may also be produced.

During the course of study of the biological properties of this extract, further interesting facts have been observed. If rabbits be injected subcutaneously with 150 mgm. of the acetone picric acid extract of the posterior lobe of the pituitary, or alternatively with 40 c.c. of standard B.P. pituitary extract, a number of them develop a definite severe macrocytic anæmia. The following table shows the typical hæmatological picture produced by this treatment.

Rabbit No. 363 ♂ 2.0 kilo.				
Time	W.B.C.	R.B.C. (Million)	Hæmoglobin gm. per 100 c.c.	Reticulocytes
	10,400	6.15	13.9	Per cent
	9,800	5.95	13.9	0.50
	11,600	6.00	13.6	0.75
Injection	20 c.c. B.P. Pituitrin	subcutaneously		
1 day	8,600	5.45	12.3	2.00
2 days	12,000	5.95	11.8	0.10
3 "	15,400	3.10	8.4	0.50
5 "	9,800	2.35	7.5	8.00
6 "	9,600	2.88	7.5	17.00
8 "	13,400	2.36	6.8	21.00
9 "	9,800	3.03	7.0	24.00
10 "	8,800	2.83	7.6	20.00
12 "				9.00

The anæmia appears quite suddenly on the fourth to fifth day, the red blood count frequently being as low as one million cells per c.mm. A marked leucocytosis, up to 50,000 white cells per c.mm., is often associated. The hæmoglobin falls proportionally less than the red blood count. A reticulocyte response commences on the fifth to sixth day and usually continues for seven to eight, reaching a peak about the ninth day. Reticulocyte counts up to 50 per cent have been observed. Examination of the blood smear shows the red cells to be well filled with hæmoglobin. Anisocytosis is present to a marked degree. Many large macrocytes and an occasional microcyte are seen. Poikilocytosis is slight. Nucleated red cells have been observed. Platelets appear normal. Leucocytes are mainly of the multi-nuclear type.

A series of control experiments have shown that hæmorrhage occurring from gastric lesions is not sufficient to explain these changes. Also control extracts of other tissues have not given any response on injection. If the animal be killed there are definite changes in the spleen, such as hæmorrhagic infarcts. The bone-marrow appears to show signs

of hyperplasia. The secretion of bile is greatly increased, as shown by a visible gross excess in intestines and faeces.

So far as we are aware, this is the first time these changes have been produced by an extract of a normal gland. The interpretation of these results is at present obscure. The possibility arises that the control of blood destruction by the reticulo-endothelial system may be vested outside the system itself and may reside in the posterior lobe of the pituitary gland. The reticulocyte response may be secondary to the anæmia, or alternatively may be due to the effect of the extract of the posterior lobe of the pituitary on the stomach causing it to produce an excess of the intrinsic factor, which in its turn acts upon the bone-marrow. Intensive investigations are being conducted into these points at the present time.

We wish to thank Dr. L. E. H. Whitby for kindly examining our data and for his opinion on the blood picture.

E. C. DODDS.
R. L. NOBLE.

Courtauld Institute of Biochemistry,
Middlesex Hospital,
London, W.1.
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¹ Dodds, E. C., Noble, R. L., and Smith, E. R., *Lancet*, 2, 918; 1934.
² Dodds, E. C., Noble, R. L., *J. Soc. Chem. Ind.*, 52; 1934.
Chemistry and Industry, p. 1026.

The Contractile Factors of the Chromosome Micelle

IN a recent article in these columns¹ and in a paper presented to the Royal Microscopical Society on February 20, 1935², I put forward a model of a chromosome as an aggregate of polypeptide protamine molecules in association with nucleic acid. It is unfortunate that data of a physico-chemical nature by means of which this hypothesis can be tested and rendered more precise are at present very meagre. It is, therefore, specially important to make the fullest use of such facts as are available, and in particular of those relating to the variable geometrical configurations of chromosomes, which are of the highest degree of delicacy and reliability^{3,4}. These are of particular importance in view of the recent work on the giant chromosomes in the salivary glands of *Drosophila*, *Chironomus* and *Sciara*⁵. I have, therefore, undertaken a systematic survey of these data and wish, in this preliminary announcement, to direct the attention of cytologists to the various contractile factors which the chromosome micelle may be expected to possess.

(1) The intramolecular or intermolecular contractile factors which depend upon electrostatic (salt-forming) attractions between basic and acidic ionised groups, belonging to the same⁶ or different molecules.